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Sequence Listing was accepted.

If you need help call the Patent Electronic Business Center at (866) 217-9197 (toll free).

Reviewer: Keisha Douglas

Timestamp: [year=2008; month=10; day=31; hr=15; min=7; sec=50; ms=811; ]

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## Validated By CRFValidator v 1.0.3

Application No: 10590275 Version No: 1.0

Input Set:

Output Set:

**Started:** 2008-10-06 16:27:05.242

**Finished:** 2008-10-06 16:27:08.003

**Elapsed:** 0 hr(s) 0 min(s) 2 sec(s) 761 ms

Total Warnings: 25

Total Errors: 0

No. of SeqIDs Defined: 28

Actual SeqID Count: 28

Error code	Error Description
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W 402	Undefined organism found in <213> in SEQ ID (5)
W 402	Undefined organism found in <213> in SEQ ID (6)
W 402	Undefined organism found in <213> in SEQ ID (7)
W 213	Artificial or Unknown found in <213> in SEQ ID (8)
W 213	Artificial or Unknown found in <213> in SEQ ID (9)
W 213	Artificial or Unknown found in <213> in SEQ ID (10)
W 213	Artificial or Unknown found in <213> in SEQ ID (11)
W 213	Artificial or Unknown found in <213> in SEQ ID (12)
W 213	Artificial or Unknown found in <213> in SEQ ID (13)
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W 213	Artificial or Unknown found in <213> in SEQ ID (15)
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W 402	Undefined organism found in <213> in SEQ ID (21)
W 213	Artificial or Unknown found in <213> in SEQ ID (22)
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### Input Set:

# Output Set:

**Started:** 2008-10-06 16:27:05.242 **Finished:** 2008-10-06 16:27:08.003

**Elapsed:** 0 hr(s) 0 min(s) 2 sec(s) 761 ms

Total Warnings: 25
Total Errors: 0
No. of SeqIDs Defined: 28

Actual SeqID Count: 28

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#### SEQUENCE LISTING

<110> KAO CORPORATION Keiji Endo Katsuya Ozaki <120> Mutant Bacterium Belonging to the Genus Bacillus <130> KS0816 <140> 10590275 <141> 2008-10-06 <150> JP 2004-062852 <151> 2004-03-05 <160> 28 <170> PatentIn Ver. 3.1 <210> 1 <211> 371 <212> PRT <213> Bacillus subtilis <400> 1 Met Ala Asp Lys Gln Thr His Glu Thr Glu Leu Thr Phe Asp Gln Val 10 Lys Glu Gln Leu Thr Glu Ser Gly Lys Lys Arg Gly Val Leu Thr Tyr 25 20 Glu Glu Ile Ala Glu Arg Met Ser Ser Phe Glu Ile Glu Ser Asp Gln 35 40 45 Met Asp Glu Tyr Tyr Glu Phe Leu Gly Glu Gln Gly Val Glu Leu Ile 50 55 60 Ser Glu Asn Glu Glu Thr Glu Asp Pro Asn Ile Gln Gln Leu Ala Lys 70 75 65 Ala Glu Glu Glu Phe Asp Leu Asn Asp Leu Ser Val Pro Pro Gly Val 

Asn Leu Leu Ser Ala Lys Glu Glu Ile Ala Tyr Ala Gln Lys Ile Glu 115 120 125

Lys Ile Asn Asp Pro Val Arg Met Tyr Leu Lys Glu Ile Gly Arg Val

105

100

Glu	Gly 130	Asp	Glu	Glu	Ser	Lys 135	Arg	Arg	Leu	Ala	Glu 140	Ala	Asn	Leu	Arg
Leu 145	Val	Val	Ser	Ile	Ala 150	Lys	Arg	Tyr	Val	Gly 155	Arg	Gly	Met	Leu	Phe 160
Leu	Asp	Leu	Ile	His 165	Glu	Gly	Asn	Met	Gly 170	Leu	Met	Lys	Ala	Val 175	Glu
Lys	Phe	Asp	Tyr 180	Arg	Lys	Gly	Tyr	Lys 185	Phe	Ser	Thr	Tyr	Ala 190	Thr	Trp
Trp	Ile	Arg 195	Gln	Ala	Ile	Thr	Arg 200	Ala	Ile	Ala	Asp	Gln 205	Ala	Arg	Thr
Ile	Arg 210	Ile	Pro	Val	His	Met 215	Val	Glu	Thr	Ile	Asn 220	Lys	Leu	Ile	Arg
Val 225	Gln	Arg	Gln	Leu	Leu 230	Gln	Asp	Leu	Gly	Arg 235	Glu	Pro	Thr	Pro	Glu 240
Glu	Ile	Ala	Glu	Asp 245	Met	Asp	Leu	Thr	Pro 250	Glu	Lys	Val	Arg	Glu 255	Ile
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Glu	Asp	Asp 275	Ser	His	Leu	Gly	Asp 280	Phe	Ile	Glu	Asp	Gln 285	Glu	Ala	Thr
Ser	Pro 290	Ser	Asp	His	Ala	Ala 295	Tyr	Glu	Leu	Leu	Lys	Glu	Gln	Leu	Glu
Asp 305	Val	Leu	Asp	Thr	Leu 310	Thr	Asp	Arg	Glu	Glu 315	Asn	Val	Leu	Arg	Leu 320
Arg	Phe	Gly	Leu	Asp 325	Asp	Gly	Arg	Thr	Arg 330	Thr	Leu	Glu	Glu	Val 335	Gly
Lys	Val	Phe	Gly 340	Val	Thr	Arg	Glu	Arg 345	Ile	Arg	Gln	Ile	Glu 350	Ala	Lys

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Phe Leu Glu 370

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<211> 795

<212> PRT

<213> Bacillus sp. KSM-S237

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gaaggaattc attccgtcga aatcgaaaca ctcattatcc gatcatatca aggaggaatg

1080

1140

1143

Asp Asn Val Lys Arg Pro Ser Glu Ala Gly Ala Leu Gln Leu Gln Glu 20 25 30

Val Asp G	Gly Gln 35	Met Thr	Leu	Val 40	Asp	Gln	His	Gly	Glu 45	Lys	Ile	Gln
Leu Arg G	Gly Met	Ser Thr	His 55	Gly	Leu	Gln	Trp	Phe 60	Pro	Glu	Ile	Leu
Asn Asp A	Asn Ala	Tyr Lys	Ala	Leu	Ser	Asn	Asp 75	Trp	Asp	Ser	Asn	Met 80
Ile Arg I	Leu Ala	Met Tyr 85	Val	Gly	Glu	Asn 90	Gly	Tyr	Ala	Thr	Asn 95	Pro
Glu Leu I	lle Lys 100	Gln Arg	Val	Ile	Asp 105	Gly	Ile	Glu	Leu	Ala 110	Ile	Glu
Asn Asp M	Met Tyr 115	Val Ile	Val	Asp 120	Trp	His	Val	His	Ala 125	Pro	Gly	Asp
Pro Arg A	Asp Pro	Val Tyr	Ala 135	Gly	Ala	Lys	Asp	Phe 140	Phe	Arg	Glu	Ile
Ala Ala I 145		150					155	_				160
Glu Pro S		165		-	-	170	-				175	
Glu Gly T	180				185					190		
Leu Arg I 1 Pro Asn I	_ L95	-		200					205			
210 Asp His H			215					220				
225 Ala Ser T		230					235					240
TITA DEL I	OIU	245	110	DCI	<u>J</u>	250	110	11011	DCI.	O L U	255	<u>- 1 y</u>

Asn Val Met Ser Asn Thr Arg Tyr Ala Leu Glu Asn Gly Val Ala Val

260 265 270

Phe Ala Thr Glu Trp Gly Thr Ser Gln Ala Ser Gly Asp Gly Gly Pro 275 280 285 Tyr Phe Asp Glu Ala Asp Val Trp Ile Glu Phe Leu Asn Glu Asn Asn 300 295 Ile Ser Trp Ala Asn Trp Ser Leu Thr Asn Lys Asn Glu Val Ser Gly 305 310 315 320 Ala Phe Thr Pro Phe Glu Leu Gly Lys Ser Asn Ala Thr Asn Leu Asp 325 330 Pro Gly Pro Asp His Val Trp Ala Pro Glu Glu Leu Ser Leu Ser Gly 340 345 350 Glu Tyr Val Arg Ala Arg Ile Lys Gly Val Asn Tyr Glu Pro Ile Asp 355 360 365 Arg Thr Lys Tyr Thr Lys Val Leu Trp Asp Phe Asn Asp Gly Thr Lys 370 375 Gln Gly Phe Gly Val Asn Ser Asp Ser Pro Asn Lys Glu Leu Ile Ala 385 390 395 400 Val Asp Asn Glu Asn Asn Thr Leu Lys Val Ser Gly Leu Asp Val Ser 405 410 415 Asn Asp Val Ser Asp Gly Asn Phe Trp Ala Asn Ala Arg Leu Ser Ala 420 425 430 Asn Gly Trp Gly Lys Ser Val Asp Ile Leu Gly Ala Glu Lys Leu Thr 435 440 Met Asp Val Ile Val Asp Glu Pro Thr Thr Val Ala Ile Ala Ala Ile 450 455 460 Pro Gln Ser Ser Lys Ser Gly Trp Ala Asn Pro Glu Arg Ala Val Arg 475 470 465

Val Asn Ala Glu Asp Phe Val Gln Gln Thr Asp Gly Lys Tyr Lys Ala 485 490 495

Gly Leu Thr	Ile Thr	Gly Glu	Asp Ala		Leu Lys	s Asn Ile 510	Ala
Phe His Glu	-	Asn Asn	Met Asr	ı Asn Ile	Ile Leu 525		Gly
Thr Asp Ala	. Ala Asp	Val Ile 535	_	ı Asp Asn	Ile Lys	s Val Ile	Gly
Thr Glu Val	. Glu Ile	Pro Val 550	Val His	: Asp Pro 555		/ Glu Ala	. Val 560
Leu Pro Ser	Val Phe 565	Glu Asp	Gly Thr	Arg Gln 570	Gly Trp	o Asp Trp 575	
Gly Glu Ser	Gly Val	Lys Thr	Ala Leu 585		Glu Glı	ı Ala Asn 590	Gly
Ser Asn Ala		Trp Glu	Phe Gly	Tyr Pro	Glu Val	_	Ser
Asp Asn Trp	Ala Thr	Ala Pro 615	=	ı Asp Phe	Trp Lys	s Ser Asp	Leu
Val Arg Gly 625	Glu Asn	Asp Tyr	Val Ala	Phe Asp	_	: Leu Asp	Pro 640
Val Arg Ala	Thr Glu 645	<del>-</del>	Met Asr	i Ile Asn 650	Leu Val	l Phe Gln 655	
Pro Thr Asn	Gly Tyr 660	Trp Val	Gln Ala	_	Thr Tyı	f Thr Ile	Asn
Phe Asp Glu		Glu Ala	Asn Glr	ı Val Asn	Gly Let	-	Tyr
Glu Val Lys 690	: Ile Asn	Val Arg 695	Asp Ile	Thr Asn	Ile Glr 700	n Asp Asp	Thr
Leu Leu Arç	Asn Met	Met Ile 710	Ile Phe	Ala Asp		ı Ser Asp	Phe 720

Ala Gly Arg Val Phe Val Asp Asn Val Arg Phe Glu Gly Ala Ala Thr \$725\$ \$730\$ \$735\$

Thr Glu Pro Val Glu Pro Glu Pro Val Asp Pro Gly Glu Glu Thr Pro
740 745 750

Pro Val Asp Glu Lys Glu Ala Lys Lys Glu Gln Lys Glu Ala Glu Lys
755 760 765

Glu Glu Lys Glu Ala Val Lys Glu Glu Lys Lys Glu Ala Lys Glu Glu
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ttcaattact ttaaaaatat ttaggaggta at	atg atg tta aga aag aaa aca 593 Met Met Leu Arg Lys Lys Thr -25
aag cag ttg att tct tcc att ctt att Lys Gln Leu Ile Ser Ser Ile Leu Ile -20 -15	-
ttt ccg gca gct ctt gca gca gaa gga Phe Pro Ala Ala Leu Ala Ala Glu Gly -5 -1 1	
aaa cat tta tta ggt aat gac aat gtt Lys His Leu Leu Gly Asn Asp Asn Val 15	
gca tta caa tta caa gaa gtc gat gga Ala Leu Gln Leu Gln Glu Val Asp Gly 30 35	
cat gga gaa aaa att caa tta cgt gga His Gly Glu Lys Ile Gln Leu Arg Gly 45 50	
tgg ttt cct gag atc ttg aat gat aac Trp Phe Pro Glu Ile Leu Asn Asp Asn 60 65	
gat tgg gat tcc aat atg att cgt ctt Asp Trp Asp Ser Asn Met Ile Arg Leu 75 80	
ggg tac gct aca aac cct gag tta atc Gly Tyr Ala Thr Asn Pro Glu Leu Ile 95	
att gag tta gcg att gaa aat gac atg Ile Glu Leu Ala Ile Glu Asn Asp Met 110 115	3 3 3 33
gtt cat gcg cca ggt gat cct aga gat Val His Ala Pro Gly Asp Pro Arg Asp 125 130	
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ggg att ccg aat aac gaa gaa ggt tgg Gly Ile Pro Asn Asn Glu Glu Gly Trp 175	
gat cca att gta gaa atg tta cgt aaa	agc ggt aat gca gat gac aac 1265

Asp Pro Ile Val Glu Met Leu Arg Lys Ser Gly Asn Ala Asp Asp Asn 190  $\phantom{\bigg|}$  195  $\phantom{\bigg|}$  200

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